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ABSTRACT

DISCOVER for Adult Learners (DISCOVER AL) and SIGI PLUS are recently developed computer-assisted guidance systems designed to assist individuals in making career decisions. This technical report highlights similarities and differences between the two computer-assisted guidance systems so that service providers may make informed choices concerning the adoption of such systems. The following features were compared: (1) user friendliness (human factors), (2) information for career decision making, (3) decision processes on which programs are based, (4) support materials, (5) differential cost analysis, and (6) limitations. The bulk of the report consists of tables that compare the two systems on these six factors and sub-elements of them. The information about the systems was gathered from the manuals provided by the respective firms (American College Testing Program and Educational Testing Service) that market them, interviews with the firms' staff members, and the collective experiences of the authors as they and their clients interacted with the systems. Cost estimates for the two systems are given, but no conclusions about the relative superiority of either of the systems are offered. (KC)

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A Differential Feature-Cost Analysis of DISCOVER for Adult Learners and SIGI PLUS: Technical Report Number 4

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A Differential Feature-Cost Analysis of DISCOVER for Adult Learners and SIGI PLUS: Technical Report Number 4

DISCOVER for Adult Learners (DISCOVER AL) and SIGI PLUS are newly developed computer-assisted guidance systems designed to assist individuals in making career decisions. Career guidance services wishing to explore the adoption of such systems could well profit from a comparison of the differential features and costs of the respective systems. Therefore, the purpose of this technical report is to highlight similarities and differences between two computer-assisted career guidance systems for adults, so that service providers may make informed choices concerning the adoption of such systems.

In order to make differential comparisons, the following rubrics were employed: (1) user friendliness (human factors), (2) information for career decision-making, (3) decision processes on which programs are based, (4) support materials, (5) differential cost analysis, and (6) limitations.

This report was prepared for the Clearinghouse for Computer-Assisted Guidance Systems at Florida State University. The Clearinghouse was established to provide current and readily accessible information relevant to selecting, implementing, and evaluating computer-assisted career guidance systems. The contents of this report consist primarily of a complete descriptive listing of the features and costs of DISCOVER AL and SIGI PLUS. The information presented in this paper was gathered from the manuals provided by the respective firms, American College Testing Program (DISCOVER AL) and Educational Testing Service (SIGI PLUS), interviews with ACT and ETS staff members, as well as the collective experiences of the authors as they themselves and their clients interacted with the systems. The criteria used in this analysis are based on the work of Harris-Bowlsbey (1983), Katz and Shatkin (1983), Maze (1984), Maze and Cummings (1982) and Riesenberg (1983). A draft of this report was sent to developers of the two systems, and their comments were used by the authors in preparing this final document.

Several aspects of this report should be noted: (1) a more detailed analysis of the systems was omitted because of space and length considerations; (2) this documentation is the result of the authors' analysis only, not the systems' developers; and (3) this report is not intended to be a marketing or promotional device for either system - that information is available directly from ACT and ETS. The following analysis presumes that the effectiveness of the two systems is equivalent. The purpose of this analysis is to provide an objective and current descriptive comparison

of features and costs for DISCOVER AL and SIGI PLUS. Therefore, the reader is strongly encouraged to examine future research reports to ascertain the relative merit of these features and costs.

While every attempt has been made to be fair and accurate, the reader must be aware of the inherent limitations of any methodology. Here, in the interest of clarity, a "checklist" comparison of systems was used, i.e. "Feature X: Does System A have it? Does System B?" Such an approach effectively simplified a mass of data; the potential problems arise where this methodology oversimplifies.

Certain characteristics cannot be adequately explained by this "yes"/"no" analysis. For example, the checklist indicates that System A handles "understanding life-career roles" and System B does not, while System B handles "issues related to child care" but System A does not. These statements may be true, but not fully informative. The real point in these examples is that where System A concentrates more on general concepts, System B offers more specific information on coping with new life-career roles. The decision as to which approach is "best" depends on typical client needs as well as the theoretical orientation and assumptions of staff members. This comparative analysis is therefore intended not as a "scoresheet" but as a preliminary guide for further detailed consideration if a particular characteristic is important for a given clientele. It is hoped that although this method may blur a few trees, it can provide a useful map of the forest.

User Friendliness (Human Factors)

Both SIGI PLUS and DISCOVER AL are fairly similar in their attempt to be user friendly. Both systems are run on the IBM PC-XT and employ several basic function keys (F1, F2, etc.) to operate the program. Both allow the user the "back up" through the program. Both systems rely heavily on print screen displays with limited use of graphics to present information. The order in which sections of the programs can be used can also be managed at the keyboard.

As for differences, SIGI PLUS provides an introduction to the systems in which a pathway is recommended for the user. SIGI PLUS provides a layering of detail of the given information by depressing the "9" key thereby accommodating users who need examples or more in-depth descriptions. While both systems allow for individual responses at various points, DISCOVER AL permits the use of actual statements by the clients and uses these statements in the program. SIGI PLUS, on the other hand, refers to an individual's supplementary information as "other factors." In one

section, DISCOVER AL actually becomes a word processor. While both systems provide summaries at the end of a user's individual appointment time, DISCOVER AL provides periodic summaries throughout the program and allows users to save and retrieve their records for use at another time. SIGI PLUS maintains no user record once the user elects to leave the system. A summary table of user friendly features is presented in Table 1.

Insert Table 1 about here

Information for Decision Making

Four categories of information for decision-making will be compared for SIGI PLUS and DISCOVER AL. They are: (a) comprehensiveness, (b) currency, (c) organization and (d) printouts.

Comprehensiveness

Both systems offer the traditional components of the career decision-making process in an apparently linear fashion (i.e. from self-assessment through implementation). However, SIGI PLUS recommends alternate paths through the system depending on the user's current situation and needs. There are also other significant differences in the respective approaches of the two systems.

Self-Assessment. SIGI PLUS includes self-assessment in values, interests, abilities, and activities. DISCOVER AL includes these same general areas of assessment as well as life career roles, life transitions, and past experiences. DISCOVER AL also provides an option for inputting external assessment data such as ACT scores. SIGI PLUS provides a more detailed skills assessment while DISCOVER AL provides the opportunity to incorporate information from outside assessment instruments.

Identifying Occupational Alternatives. SIGI PLUS generates occupational lists on the basis of user preferences pertaining to the given assessment factors. DISCOVER AL generates occupational and/or major lists on the assessment factors as well as in the World-of-Work Map. SIGI PLUS is more interactive in nature by allowing the user more freedom to manipulate variables.

Obtaining Occupational Information. SIGI PLUS provides job descriptions on 223 occupational titles, uses 520 job titles for generating occupational alternatives, and refers

to a total of 1500 job titles. For specific information on a given occupational title, SIGI PLUS can give 27 different categories of information and another 5 factors related to preparation for the occupation. DISCOVER AL, on the other hand, provides descriptions for 417 occupations in 23 Job Families and gives 16 categories of information for a selected occupation.

Education Information. SIGI PLUS concentrates on occupations and DISCOVER AL concentrates on schools. What SIGI PLUS provides is an occupation-specific program and course descriptions plus information on educational support, such as financial aid and home-study. DISCOVER AL provides an educational search function and descriptions of 2-year, 4-year, graduate and external degree programs and schools. Thus, DISCOVER AL is more useful for locating a specific institution to attend.

Adult Factors. SIGI PLUS provides information and instruction on some of the issues specific to adults such as child care, time management, and home-job factors. DISCOVER AL focuses on change issues and addresses 8 roles adults may play as well as provides an assessment and suggestions with respect to career transitions.

Decision-Making. Both systems include decision-making information which will be elaborated upon in the Decision Process section of this paper.

Employment Planning. SIGI PLUS focuses on the action planning process and transition to subsequent steps beyond use of the computer system. DISCOVER AL focuses specifically on job acquisition and the topics of interview, cover letter, and resume. For the latter, the system becomes a word processor and allows the user to develop a draft of a resume.

More specific detail on the above content areas is presented in Table 2.

Insert Table 2 about here

Currency

Both SIGI PLUS and DISCOVER AL are updated at least annually and provide information which is consistent with other occupational and educational information available through other media formats, i.e., books, pamphlets, etc.

Organization

Both SIGI PLUS and DISCOVER AL are organized in systematic ways leading from self-assessment to implementation phases. SIGI PLUS includes 9 sections while DISCOVER AL includes 6 modules. The major difference between the two systems occurs in the sequence of content. SIGI PLUS includes the decision-making component after the educational information section, while DISCOVER AL includes educational information after decision-making. Both systems allow the flexibility of using various sections/modules in any order the user may wish.

Printouts

SIGI PLUS and DISCOVER AL both provide the user with printouts that can be viewed at later times. Both will prompt the user to make printouts of key information. There are several differences between the two systems with respect to printout choices. SIGI PLUS allows the user to make copies of selected "key" screen displays, while DISCOVER AL allows any screen display to be "dumped." SIGI PLUS printouts include the user's name, the date, and a title that describes the information presented to the user. SIGI PLUS provides a summary at the time the user signs off, indicating name, date and system features completed at the present session at the computer. DISCOVER AL provides a summary at the time the user signs off, indicating name, date and summary of information stored about the user under labeled categories.

Decision Process

Both SIGI PLUS and DISCOVER AL include instructional materials to assist the user in becoming familiar with their respective decision making processes. SIGI PLUS integrates decision-making into the entire program with users being asked to make decisions about specific topics throughout the sequence. DISCOVER AL, on the other hand, includes a separate decision-making module which users may apply to specific personal situations such as taking a specific job or role. SIGI PLUS also provides a separate decision section which may help the user evaluate three occupations at a time with respect to chances for success and rewards.

For users who choose to use parts of the system at different times, the systems differ in how they may aid decision making. As stated above, DISCOVER AL maintains a record in storage while SIGI PLUS does not. Therefore, DISCOVER AL can provide a retrieval of information to enable the user to return to a previous point in the decision

process. The SIGI PLUS user may require the assistance of a staff member and a copy of their previous printouts to return to a specific point in the decision process should interruption be necessary.

Support Materials

Both SIGI PLUS and DISCOVER AL provide support materials for the user as well as the professional. SIGI PLUS provides an individual User's Guide, which may be used prior to an appointment time. DISCOVER AL provides a User's Guide, which can be used to guide an individual while on the system. SIGI PLUS provides separate lists of computer instructions, printouts, and occupations. In addition, SIGI PLUS provides SIGI PLUS: A Guide to Further Resources, another individually-oriented consumable booklet which users may take with them after employing the system. In DISCOVER AL, the more detailed descriptions of the World-of-Work Map, Abilities and Skills are in the User's Guide. DISCOVER AL also provides a package of training materials comprised of a manual for the site administrator, a workbook for the counselor, and a two-hour videotape. A summary of support materials and hardware compatibility is presented in Table 3.

Insert Table 3 about here

Differential Cost Analysis

Both systems provide options to enhance their respective "basic packages." The relative add-on options as well as differences in cost related software licenses are presented in Table 4. The data presented refers to direct costs only.

Insert Table 4 about here

Limitations

Problems and Constraints. As with most computer guidance systems, both SIGI PLUS and DISCOVER AL have limitations for their clients. Both systems depend upon clients who can read and understand the presented material. Both depend on accuracy of and understanding of the self-assessment information. Both make summary statements with respect to the user's consistency and validity of assessment statements. It is possible on both systems to reach conclusions or be given statements based upon inaccurate assessments.

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Table 1

Summary Comparison of User Friendly Features

Human Factors	DISCOVER AL	SIGI PLUS
color video displays	yes	yes
system content color-coded	yes	yes
graphics enhanced screen displays	yes	yes
upper/lower case characters	yes	yes
special purpose function keys		
back-up function	yes	yes
quick exit	yes	yes
print screen	yes	yes
menu drive screen sequencing	yes	yes
preliminary operating instructions	yes	yes
prompting for user input	yes	yes
user controlled access to system content	yes	yes
explicit recommended pathway for use of system based on user characteristics	no	yes
novice/expert access mode	yes	yes
all screen displays suggested for printing are formatted specifically for use as printouts	no	yes
screen substitutions	yes	yes
availability of optional detailed information (layering)	no	yes
user memory record (system capability to store user data between sessions)	yes	no
integration of user data from printouts at different points in the system	yes	yes

Table 2

Summary Comparison of Information for Decision Making

System Content	DISCOVER AL	SIGI PLUS
User access		
User access to system content influenced by a model of career decision-making	yes	yes
Introduction		
orientation to function keys	yes	yes
overview of system content	yes	yes
explicit recommended pathway for use of the system based on user characteristics	no	yes
Self-assessment		
life-career roles	yes	no
life transitions	yes	no
interests/fields of knowledge	yes	yes
abilities/activities	yes	yes
experiences	yes	no
values	yes	yes
characteristics necessary for success in nontraditional ed.	yes	no
capability to input scores from external paper & pencil assessment instruments (e.g., ACT scores)	yes	no
Identifying occupational alternatives		
capacity to select specific assessment variables for identifying occupational alternatives	yes	yes
capacity to select factors the user wishes to avoid in identifying occupational alternatives	no	yes
capacity to determine why a particular occupation does not appear on the user's list	yes	yes

(table continues)

System Content	DISCOVER AL	SIGI PLUS
Obtaining occupational information		
capacity to browse through occupational information using a World of Work taxonomy	yes	no
capacity to ask a variety of questions about specific occupations	yes	yes
capacity to present information on two occupations on one display/printout	no	yes
multiple sources used to develop occupational information	yes	yes
annual updating of salary and employment outlook data	yes	yes
all other occupational info reviewed on a three yr. cycle	yes	yes
information provided:		
definition of occupation	no	yes
work tasks/activities	yes	yes
typical job titles	no	yes
relat. occupations/specialties	yes	no
work location/where employed	yes	no
work setting	yes	yes
special conditions	no	yes
necessary tools & equipment	yes	no
training pathways/specific occupational training/ educational requirements	yes	yes
required college courses	yes	yes
personal qualities	yes	yes
skills required	yes	yes
generic skills required in management	no	yes
other requirements: experience/ licensing/certification	yes	yes
interest fields/likes & dislikes	yes	yes
beginning income	yes	yes
average income	yes	yes
top earning possibilities	yes	yes
salary range	yes	yes
promotion/advancement opportunities	yes	yes
employment outlook	yes	yes
security/effect of economic conditions	yes	yes
seasonal/geographic limitations	yes	no

(table continues)

System Content	DISCOVER AL	SIGI PLUS
information provided (cont.):		
personal values (e.g., contribution to society, leadership, prestige level, leisure, independence, variety)	no	yes
where to find more information	no	yes
number of occupations included	417	223
number of job titles	417	1500
Educational Planning		
capacity to select specific search variables for identifying educational alternatives	yes	no
capacity to complete		
two-year college search	yes	no
four-year college search	yes	no
graduate & professional school search	yes	no
external degree program search	yes	no
overview of nontraditional approaches to education	yes	yes
capacity to obtain info. on		
two-year colleges	yes	no
four-year colleges	yes	no
graduate & professional schools	yes	no
external degree programs	yes	no
overview of how to prepare for specific occupations	no	yes
typical generic programs of study for specific occupations	no	yes
description of work tasks to encourage learning by doing	no	yes
user estimation of chances of successfully completing a preparation program	no	yes
development of an educational action plan	yes	yes
Coping with adult transitions		
understanding life-career roles	yes	no
understanding adult transitions	yes	no
general information re:		
time management	no	yes
calculating preparation costs	no	yes
internship/co-op placement	no	yes
financial aid	no	yes

(table continues)

System Content	DISCOVER AL	SIGI PLUS
child care	no	yes
care for adults	no	yes
finding accredited home-study courses	no	yes
credit via standardized testing	yes	yes
credit for military training	yes	yes
credit for prior learning	yes	yes
Decision making		
general description of a career decision making model	yes	yes
integration of summary data from all other system modules into the decision making module	yes	yes
integration of three occupational alternatives into a decision making matrix that balances potential rewards and chances of successfully completing preparation requirements, for the purpose of identifying a tentative choice	no	yes (only if system is completed in one sitting)
feedback to the user regarding the characteristics of his or her tentative choice	no	yes
Employment planning		
user identification of the characteristics of the job and organization being sought	yes	no
general information re:		
resume writing	yes	yes
letter writing	yes	no
job interviewing	yes	no
demonstrating job skills	no	yes
building a network of contacts	no	yes
writing a resume	yes	no
cover letter practice exercise	yes	no
drafting questions to ask during an interview	yes	no
overview of how to prepare and skills required for specific occupations	no	yes
identifying "next steps" in achieving career goals	no	yes
identifying options for developing new skills	no	yes

(table continues)

System Content	DISCOVER AL	SIGI PLUS
User Exit		
review of all system modules completed to date	yes	no
review of all system modules completed during this session at the computer	yes	yes
identifying occupations to be maintained in the user record	yes	no
completing a brief on-line anonymous evaluation questionnaire (optional)	yes	no
Local Data Option		
capacity to integrate local data into the system	yes (completed at the DISCOVER center)	yes (completed at the user site)

Table 3

Summary Comparison of Support Material Available from Developers and Hardware Compatibility

	DISCOVER AL	SIGI PLUS
Support Materials for Users		
non-consumable user guide	yes	yes
non-consumable list of occupations	yes	yes
non-consumable list of majors and post-secondary educ. instit.	yes	no
non-consumable poster - world of work map	yes	no
consumable user guide	no	yes
consumable guide to follow-up activities/additional resources	no	yes
consumable printout checklist	no	yes
Support Materials for Institutions		
newsletter	yes	yes
professional manual	yes	yes
training videotape	yes	no
Technical Support for Users by Phone	yes	yes
Training from the Developer		
on-site training	yes	no
national/regional conferences	yes	yes
Reference Documents		
system design process & assumptions	no	yes
pilot test data	no	yes
Hardware Compatibility (all require a fixed disk drive)		
IBM PC with expansion unit	yes	yes
IBM PC-XT	yes	yes
IBM PC-AT	yes	yes
Tandy 1200	yes	yes
Leading Edge PC	no	yes
COMPAC+ PC	yes	yes
AT&T PC	no	yes
Zenith PC	no	yes

Table 4

Summary Comparison of Differential Cost Feature Analysis

Feature	DISCOVER AL	SIGI PLUS
Hardware		
system unit	K[a]	K
color monitor	K	K
printer	K	K
Hardware Maintenance	K	K
Software License (1 year)		
system	$1750.00	$1375.00 ($1075.00-3 yr. license)
Support Materials		
consumable (assumes 500 users per year)		
user guide ($15.00 per 50 copies)	N/A	$150.00
follow-up activities ($15.00 per 50 copies)	N/A	$150.00
printout checklist ($5.00 per 50 copies)	N/A	$50.00
nonconsumable		
newsletter	N C	N C
user guide	N C	N C
professional manual	N C	N C
poster- world-of-work map	N C	N/A
DOT crosswalk	N/A	N C
training videotape	$50.00	N/A
general information		
career dec. making info.	K	K
occupational info.	K	K
educational info.	K	K
Technical Support	user places call	800 number
Supplies		
computer paper	K	K
printer ribbons	K	K

(table continues)

[a] K = Constant (costs potentially equal for both systems)
N/A = Not available from the developer at this time
N C = No charge

Feature	DISCOVER AL	SIGI PLUS
Facilities		
physical renovation (if necessary)	K	K
furnishings (if necessary)	K	K
Personnel		
direct interventions with users	K	K
administration	K	K
materials development (system specific	K	K
Training from the Developer		
on-site training	N C	N/A
nat./regional conferences registration fee	$50.00	$60.00
travel expenses	K	K
TOTAL	$1850.00 (plus constant)	$1785.00 (plus constant)